

ABSTRACT

The present invention concerns methods for the *ex vivo* formation of mammalian bone and subsequent uses of the bone. A critical and distinguishing feature of the present invention are defined tissue culture conditions and factors resulting in the formation of bone cell spheroids. The invention also provides for methods of implanting into subjects the *ex vivo* formed bone. Also described are methods for genetically altering the bone cell spheroids to affect bone formation, identification of candidate modulators of bone formation, and identification of genes involved in bone formation.